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ABSTRACT

In order to give the training center just beginning to use programmed instruction (PI) a "head start," a graduated annotated reading list is presented. Having read this literature, the reader should be able to identify behavioral objectives, define programmed instruction and individualized instruction, and understand the teacher or learning manager's role in using PI for individualized instruction. The bibliography is divided into three major sections: (1) Programmed Instruction: Theory and Principles, Programming, Use of, Evaluating, Past-Present-Future, (2) Contingency Management and Other Motivational Methods, and (3) Sources of Programmed Materials. A total of 38 entries are made. (Author/CK)

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GRADUATED READING LIST

for Users of

PROGRAMMED INSTRUCTION

Experimental Manpower Laboratory for Corrections
Draper Correctional Center
Elmore, Alabama

AA012301

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GRADUATED READING LIST
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PROGRAMMED INSTRUCTION

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under

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Rehabilitation Research Foundation
John M. McKee, Ph.D., Director
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INTRODUCTION

Training centers implementing programmed instruction (PI) into their basic education programs (in whole or in part) for the first time need certain basic reading materials for pre- and in-service staff development and training. A basic reference shelf should be established and kept up to date. Joining professional organizations, such as the National Society of Programmed Instruction (NSPI), organizing local chapters, and subscribing to journals such as *Educational Technology, Training in Business and Industry, Educate*, and the *NSPI Journal*, will help initially in this task. Experts in the areas of programmed instruction, individualization of instruction, and motivational technology are contributors to these organizations and journals. The reader can quickly refer to sources of programmed materials, methods of evaluating materials, new approaches to the use of PI, and results of experimental work in the field, as well as sources of consultants.

In order to give the training center just beginning to use programmed instruction a "head start," a graduated annotated reading list has been prepared. Revealing the content of the publications will, hopefully, motivate the readers to delve further into the actual articles and texts. Having read this literature, the reader should be able to identify behavioral objectives, define programmed instruction and individualized instruction, and understand the teacher or learning manager's role in using PI for individualized instruction. Since some of the material may be suitable for pre- and in-service staff training, we have given each listing a priority ranking.

The bibliography is divided into three major sections:

A. Programmed Instruction: Theory and Principles, Programming, Use of, Evaluating, Past-Present-Future

B. Contingency Management and Other Motivational Methods

C. Sources of Programmed Materials

Some of the materials listed in one section may overlap in other sections, but essentially the theme of the article or book will determine the section in which it will be listed. Some of the books or articles on the reading list relate more to the "programmer" than to the learning manager or administrator, but they are included here in order to give the latter certain concepts and procedures involved in the development of programmed materials. These concepts will be valuable to them in selecting, evaluating, and using PI.

GRADUATED READING LIST FOR USERS OF PROGRAMMED INSTRUCTION

SECTION A

PROGRAMMED INSTRUCTION: Theory and Principles, Programming, Use of, Evaluating, Past-Present-Future

1. Evans, J.L. *Principles of programmed learning.* (3rd ed.) Albuquerque, New Mexico: Teaching Machines, Inc., 1962. Distributed by: Teaching Materials Corporation, a division of Grolier Incorporated, 575 Lexington Avenue, New York.

   A short programmed course in principles of programmed learning – the primary principle being that learning is most efficient, pleasant, and progressive when the learner proceeds through a programmed course at his own pace and where the number of steps (frames) involved is small and responses can be easily given and checked. Other principles of learning which have been laboratory tested are also covered.

2. *Synopsis of education procedures and terminology for individualized training.* Mansfield, Ohio: Didactics Corporation.

   A brochure containing many terms used in developing and using programmed instructional materials. The basic education learning manager should include these terms in his repertoire.

3. Markle, S.M. *Good frames and bad – a grammar of frame writing.* (2nd ed.) New York: John Wiley and Sons, 1969.

   CONTENTS

   The Basic Programming Principles
   The Basic Elements and Operations
   Systematic Approaches to Design
   Adaptive Programing and Individual Differences
   Editing

4. Burns, R.W., & Craik, M.B. *The teacher and programmed instruction.* Reprinted from **Educational Technology**. Englewood Cliffs, New Jersey: Educational Technology Publications, Inc., 1964.

   The authors point out some "conceptions" and "misconceptions" about the use of programmed instruction in the classroom. They place great emphasis on the teacher's (learning manager's) role as being very important in the successful use of programmed instruction. Teachers must not only have a basic understanding of the

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programs they are using but also of the process by which the programs were developed. At least seven areas were considered essential to a basic understanding: (1) the basic learning theory relative to linear and branching methods, (2) behaviorally designed objectives and their roles in programming, (3) sequencing of content, (4) basic principles of frame writing, (5) interpretation of research data, (6) function of criterion tests, and (7) error rates.

In addition, teachers need in-service meetings, workshops, or selected written materials to guide them in selecting and using programs for specific purposes, such as in overcoming motivational problems and in dealing with students who have reading handicaps. These teacher-training programs should place emphasis upon: (1) subject matter proficiency, (2) skill in test construction, (3) counseling techniques, (4) diagnostic techniques, (5) skill in formulating educational objectives, (6) new approaches in methodology, and (7) a basic understanding of learning theory.

Far from replacing teachers, programmed instruction both changes and increases the teacher's role and responsibilities. But payoff for such demands is the ability to know to what extent the teacher's efforts have resulted in the student's learning – measurement.

5. Mager, R.F. *Preparing instructional objectives.* Palo Alto, California: Fearon Publishers, 1962.

A short book for teachers and student teachers...for anyone interested in transmitting skills and knowledge to others...a book about preparing instructional objectives – a basic step to successful learning.

CONTENTS

Objectives
Why We Care about Objectives
The Qualities of Meaningful Objectives
Identifying the Terminal Behavior
Further Defining the Terminal Behavior
Stating the Criterion
Self-Test

6. Mager, R.F., & Beach, K.M., Jr. *Developing vocational instruction.* Palo Alto, California: Fearon Publishers, 1967.

This book is designed to aid both the skilled craftsman who is preparing instruction through which to teach his craft, and the experienced vocational or technical instructor who is interested in improving his present course of theory or an exposition of educational philosophy. Nor does it prescribe *what* to teach. It is designed to help develop instruction in a vocational or technical field, according to procedures developed in the research laboratory and tested in the classroom.

CONTENTS

Strategy of Instructional Development
Job Description
Task Analysis
Target Population
Course Objectives
Course Prerequisites
Measuring Instruments
Types of Performance
Selection of Instructional Procedures
Sequencing Instructional Units
Lesson Plan Development
Improving Course Efficiency
Improving Course Effectiveness
Sources of Instructional Materials

7. Lysaught, J.P., & Williams, C.M. *A guide to programmed instruction.* New York: John Wiley and Sons, 1963.

Although written primarily for programmers or developers of programmed instruction, the book has considerable value for the users and managers of individualized programmed instruction programs.

CONTENTS

Origins and Fundamentals of Programming
Selecting a Unit to Be Programmed
Assumptions about Learners
Appropriate Objectives
Selection of a Paradigm
Constructing the Program
Editing and Review
Evaluation
Applications and Implications

8. McKee, J.M. *An introduction to programmed instruction.* Unpublished manuscript. Elmore, Alabama: Rehabilitation Research Foundation, September, 1968.

An overview of how programmed instruction works, its use in core curricula and in enrichment programs, where to obtain programmed instructional materials, selection of materials proper to the target population, the role of the teacher in using programmed instruction, and evaluating the effectiveness of programmed instruction.

The paper could benefit programmers as well as learning managers teaching students using programmed instruction. It covers in simple language the characteristics

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of programmed instruction, reasons for using it, different formats of programmed instruction, sources of materials, use of PI in teaching machines, selecting effective materials for an individual, and the learning manager's role. It also gives brief suggestions for measuring PI effectiveness and some of the results experienced in the use of PI with prison trainees at Draper Correctional Center, Elmore, Alabama.

9. Trow, Clark. *Behavioral objectives in education.* Reprinted from **Educational Technology**. Englewood Cliffs, New Jersey: Educational Technology Publications, Inc., 1967.

The author attends to behavioral objectives as first priority in the development of an educational technology. He points out that teacher assignments and tests may qualify as behavioral objectives, but they may be too late, too restricted, too sporadic, or ill-adapted to the learner or to the instruction the learner has received.

Calling for a more systematic procedure in which one merely asks a simple question, "What do we expect students to be able to do as a consequence of receiving our instruction?" leads Trow quite obviously into a discussion of effect on learner – or utilization of behavioral objectives. The maxims for proper utilization he suggests are: students should know what is expected of them, should be provided with the means by which they can learn what is expected, and should not be required to achieve behavioral objectives that exceed their capabilities. These maxims provide basic directives for those who are concerned with formulating objectives: specificity and selectivity.

10. McKee, J.M. *Adult basic education for the disadvantaged: Procedures used to raise the basic educational level.* Paper presented at the Sixtieth Annual Convention of the American Vocational Association, Denver, Colorado, December 6, 1966.

The author outlines steps for setting educational goals, assessing deficiencies, prescribing a remedial program, applying motivational theory, and managing contingencies. The paper includes sample test profiles, a flow chart for a programmed instruction fraction lab (package of PI lessons designed to identify and remedy fractions deficiencies), and performance comparisons in a contingency management experiment. Emphasis is placed upon the need for proficiency in language arts and arithmetic to function adequately in vocational training and employment.

11. Burns, R.W., & Craik, M.B. *Factors for consideration in program selection.* Reprinted from **Educational Technology**. Englewood Cliffs, New Jersey: Educational Technology Publications, Inc., 1964.

Several practical ways by which new, self-instructional materials (an "unknown quantity" now available to thousands of teachers and administrators) may be evaluated as a means of bridging the gap between those who have developed the new technology and those who will consider using it. Research and descriptive data should inform the evaluator about achievement, age or grade level for which the program is designed,

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the number of learners on whom the program was tested, group normative data, the number of revisions following the original draft, average time needed by learners to complete the program, or range of time needed by slow to fast learners, information on level of achievement of learners who used the program, postlearning achievement norms, and error rates (frame, learner or program). If no research information exists, it may be assumed that materials have been produced without being carefully evaluated.

12. Wallace, J. *How to evaluate and select programmed instructional materials.* Elmore, Alabama: Rehabilitation Research Foundation, 1970.

A staff training module for an individualized training system which provides guidelines for evaluating and selecting programmed instructional materials for specific needs. This programmed lesson teaches the potential purchasers of programmed instructional materials a systematic way by which they can evaluate and select programmed materials suited to the instructional objectives formulated by the training center.

The need to develop specific instructional objectives as a prerequisite for examining and selecting programmed materials suited to these objectives is emphasized. The general procedures include: formulating instructional objectives, ordering free-inspection copies of programmed materials, reviewing programmed materials and analyzing the writer's validation (tryout) data, instructional objectives, etc., and selecting those materials which are most compatible to the training center's instructional objectives.

13. *How to evaluate published programmed instruction.* Albany, New York: Learning Technology, 1969.

Provides a "Checklist for Evaluating Programmed Instruction"; sequential steps for evaluating programmed materials with explanations are outlined. Having followed these step-by-step procedures in evaluating off-the-shelf PI, one should be able to save time in selecting the best and most economical materials for a basic education program.

14. Thomas, T.I.N. *This is programmed learning.* Industrial Canada, April, 1966.

A one-page, 15-frame programmed learning course which demonstrates how programmed learning works.

15. Seay, D.M. *The roles of the teacher for the effective use of PI in a correctional setting.* Reprinted from **Journal of Correctional Education**, January, 1968.

The experiences described in the monograph occurred in an experimental-demonstration project operated under contract with the Office of

Manpower Policy, Evaluation, and Research, U.S. Department of Labor, under the authority of the Manpower Development and Training Act.

The monograph describes the characteristics of the offender, roles of the teacher (vocational and basic education), individualization of instruction, motivational techniques, reading programs, contingency management process, and in-service training programs for staff development in the Draper Project.

16. McKee, J.M., & Seay, D.M. *The use of individually prescribed instruction for the disadvantaged.* Elmore, Alabama: Rehabilitation Research Foundation, January, 1970.

Presents the current views of educational leaders toward individually prescribed instruction using programmed instructional materials to solve educational problems of the disadvantaged. The authors point out that this system is gaining recognition and is being used wherever education and training occur – in business and industry, public schools, mental hospitals, manpower development and training programs, and in correctional settings. The paper, which focused on the adaptation and use of individualized programmed instruction in adult basic education for the disadvantaged, had as its objectives: "To describe a model IPI system, to recommend certain considerations if it is to be used successfully, and to show that programmed instructional (PI) materials work best in the context of a broader learning system where individually prescribed and managed instruction is the goal."

The authors discuss the basic steps in implementing an IPI system (diagnosing learning deficiencies, prescribing specific materials to correct these deficiencies, managing the learning activities, and evaluating trainee progress and the system itself) and give implications of contingency management for model development of a new learning and instructional environment.

17. McKee, J.M. *The use of programmed instruction in correctional institutions.* Paper presented at the East Coast Seminar on Adult Basic Education in Morgantown, West Virginia, on January 19, 1970.

The author reviews the early history and progress of PI in corrections and includes a good review of related literature. He discusses the results of a questionnaire survey of correctional institutions concerning their use of PI – 79% of the institutions surveyed reported some use of PI.

McKee offers the following considerations which may prove helpful in planning and operating an instructional system using PI: Learn the underlying theoretical principles of PI; get staff committed to PI; recognize that PI has limitations; involve the trainee in planning and operating the instructional program; relate basic education skills as closely as possible to occupational goals and work; use small instructional units or modules more than extended programs; and employ paraprofessionals, such as college students, to assist in the training system and provide them with adequate orientation and supervision.

18. Skinner, B.F. *The technology of teaching.* New York: Appleton-Century-Crofts, 1968.

CONTENTS

The Etymology of Teaching
The Science of Learning and the Art of Teaching
Teaching Machines
The Technology of Teaching
Why Teachers Fail
Teaching Thinking
The Motivation of the Student
The Creative Student
Discipline, Ethical Behavior, and Self-Control
A Review of Teaching
The Behavior of the Establishment

19. Pipe, P. *Practical programming.* New York: Holt, Rinehart and Winston, September, 1966.

CONTENTS

Introduction
Programming Today
    Characteristics of Programmed Instruction
    History of Programmed Instruction
    Linear Programming
    Branching Programming
    Two Spurious Issues
Preparation
    Step 1: Selecting Your Topic
    Step 2: Writing a General Statement
    Step 3: Defining Your Objectives in Behavioral Terms
    Step 4: Defining Prerequisite Skills in Behavioral Terms
    Step 5: Writing a Criterion Test
    Step 6: Developing a List of Contents
    Final Caution
Writing the Program
    The Five Phases of a Program
    Student Responses
    Format
    Linear Programs
    Branching Programs
Testing and Revision
Editorial Qualities

20. Saettler, P. *The systems approach to instruction: a prospective view.* **A History of Instructional Technology.** New York: McGraw-Hill, 1968, 268-282.

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A frontier development, the systems approach to instruction, offers a conceptual framework which can provide a model for the achievement of a truly scientific technology of instruction. In this chapter the systems concept, phases of instructional system development, and implications for educational change are considered. There are sections on the origin of the systems concept; a systems approach to instructional communications; the characteristics of an instructional system; the basic principles of instructional systems development (design, development, operation and evaluation); and the implications of the systems concept for educational change (instructional change, change in educational organization, and change in educational staffing).

21. Silvern, L. C. *Systems analysis and synthesis in training and education.* **Automated Education Handbook**. Detroit, Michigan: Automated Education Center, 1965. I C 1 - 25.

Presents fundamental concepts and terminology of systems approach to training and education--system in general and instructional system in particular. It describes the utility of models and the significance of simulation as a process. Several aspects which one should consider in classifying the instructional system are outlined. It makes tremendous efforts to tear away the mysticism surrounding the concept of system and to encourage the flowchart model technique in conceptualizing instructional systems.

22. Meredith, G.M. *A systematic approach to the use of PI in basic education and/or remedial education.* Presented to the National Manpower Training Association at the American Vocational Association Convention, Dallas, Texas, December 10, 1968, and published in the **American Vocational Journal**, 1969, **44** (2).

A description of the characteristics of PI and a basic approach to its use: How to diagnose deficiencies, prescribe for them, manage learning, and evaluate. Also discusses training educators to use PI in learning situations, optimum staff characteristics, and the results of an experiment in contingency management.

The paper emphasizes the need for a systematic approach in diagnosing learning deficiencies, prescribing a tailored program for meeting the needs of the individual, and managing the learning activities of each individual. It also explains how evaluation and feedback can be built into the system and touches lightly on contingency management and performance contracting in the use of PI. The type of staff needed to operate a PI system is also described.

23. Blake, H.E., & McPherson, A.W. *Individualized instruction -- Where are we? A guide for teachers.* Reprinted from **Educational Technology**, Englewood Cliffs, New Jersey, 1969.

The authors describe individualized instruction in terms of what it means and what it does not mean, current trends in individualized instruction as they developed

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from 1959 to 1969, and set forth two projects which at the time were testing numerous individualized instructional programs.

Following separate listings of advantages of individualized instruction *for the child* and *for the teacher*, a brief discussion of hardware vs. software, the authors point up the changing but critical role of the teacher in the individualized instruction movement.

SECTION B

CONTINGENCY MANAGEMENT AND OTHER MOTIVATIONAL METHODS

1. Homme, L., & Csanyi, A.P. *Contingency contracting – a system for motivation management in education.* Albuquerque, New Mexico: Behaviors Systems Division, Westinghouse Learning Corporation, 1968.

The authors have programmed a system for motivation management in contingency contracting for educational achievement. The five major frame sequences include: (1) positive contingency contracting, (2) reinforcing events, (3) rules of contracting, (4) educational applications of contingency contracting, and (5) self-management.

2. Homme, L., C'de Baca, P., Cottingham, L., & Homme, A. *What behavioral engineering is.* Albuquerque, New Mexico: Behavior Systems Division, Westinghouse Learning Corporation and Albuquerque Child Guidance Center. (A reprint from **The Psychological Record**, 1968, 18, 425-434.)

ABSTRACT

It is asserted that behavioral engineering is not simply a matter of contingency management, but a combination of two technologies: the technology of contingency management and the technoloby of stimulus control. Contingency management involves mainly an emotional commitment or willingness to pay off for the behavior wanted; the technology of stimilus control involves techniques for arranging circumstances so that the response is made while *S* is observing the appropriate properties of the stimulus which is to control the response.

Recognizing that a technology for installing behaviors does exist, it is suggested that research in behavioral engineering take the direction of installing in *S*'s repertorie behaviors relatively neglected by behaviorists, such as the early education of the child, and responses such as the favorable self-concept, love, and joy.

3. Loehr, J.G., & C'de Baca, J.L. *Teaching contingency management to nonprofessionals.* Paper presented at the annual convention of the National Society for Programmed Instruction, San Antonio, April, 1968.

The author describes a workshop in behavior management which was conducted for a group of nonprofessional Head Start teachers. The objective of the workshop was to provide the teachers with a useable technology of behavior management.

The workshop presentation employed methods such as high simulation role playing, evaluation of and by peers during problem-solving sessions, large and small group discussions, movies, problem-solving exercises, and response-contingent lectures.

After the presentation, all the participants demonstrated the correct use of the contingency management method. At fixed periods following the workshop, the participants were observed and evaluated. The paper describes what happened during the training session and the findings of a follow-up study.

4. Clements, C., & McKee, J.M. *Programmed instruction for institutionalized offenders: Contingency management and performance contracts.* Reprinted from **Psychological Reports**, 1968, 22, 957-964. Southern Universities.

An experiment in contingency management. Contractual agreements and contingency management procedures were used in an attempt to increase the productivity of 16 prison inmates studying programmed educational materials. Programmed instruction requires that subject (*S*) respond in a verbal (written) manner to specially constructed questions and/or statements. A question or statement and its corresponding response constitute a "frame." *S*s agreed to complete a progressively greater number of frames per week during an examiner (*E*)-management phase. Work was assigned daily by means of a performance contract. During a subsequent self-management phase, *S*s contracted with themselves to produce more frames than they had completed during that baseline. Following completion of a unit of work during the *E*-management and self-management phases, *S* was allowed a 15-minute period in which he could either select an item from a reinforcement menu or opt to return to the study area. Under contingency-management procedures, *S*s successfully completed the work assigned at first by *E* and later by themselves. Increased amounts of work were accompanied by greater work efficiency; total time in the work area per day decreased, and the number of frames per hour increased. Test performance was better during the contingency-management phases than in the baseline phase.

5. Mower, D.E. *The language of behavioral engineering.* Reprinted from **Educational Technology**. Englewood Cliffs, New Jersey, 1969.

The author emphasizes the need for teachers to become familiar with the terminology being used in the "new educational technology." He cautions the teacher to become overly anxious during this "vocabulary shift," and then points out to the teacher that the value of the behavioral terminology lies in the fact that it permits specific description and measurement. He then introduces the teacher to some of the terminology involved in the "shift." Among the terms he describes and discusses are: behavioral objectives, precision recording, reinforcement, and carryover.

6. Homme, L., Csanyi, A.P., Gonzales, M.A., & Rechs, J.R. *How to use contingency contracting in the classroom.* Champaign, Illinois: Research Press, 1969.

"A complete How-To-Do-It manual for teachers, in programmed form. A powerful, classroom-tested technique to: increase a student's willingness to learn; permit each student to progress at his own best speed; maintain classroom discipline; and build habits of self-control and independent study."

"Contingency contracting is an outgrowth of the work of psychologist, B.F. Skinner, with whom the principal author of this book worked at Harvard. Skinner and his associates emphasized that human behavior can be changed profoundly through a systematic program of reinforcement. Dr. Homme and his co-authors, ... have emphasized the importance of mutual respect between teacher and student. Far from being an automation to be manipulated, the child in the contingency-managed classroom gains in self-respect and in ability to work independently toward his own goals."

CONTENTS

Part I HOW CONTINGENCY CONTRACTING WORKS

Chapter
1. "Something pleasant will happen if..."
2. What makes a reinforcer work?
3. Grandma's Law and other rules
4. Contracting and the curriculum
5. Shifting to self-contracting

Part II APPLYING CONTINGENCY CONTRACTING IN THE CLASSROOM

Chapter
7. Preparation of materials
8. Classroom organization
9. Management of the class
10. Correcting contract malfunctions

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SECTION C

SOURCES OF PROGRAMMED MATERIALS

Catalogs

1. Hendershot, C.H. *Programmed learning, a bibliography of programs and presentation devices.* Bay City, Michigan: Carl H. Hendershot (Supplemented).

   The catalog comes in two volumes. The various available programmed instructional materials are listed by subject in one volume and by publisher in the other. Each volume also gives the approximate number of hours required for completion, the number of frames in the program, the grade level, list prices, and "other information" for each entry.

   The catalog is intended to encourage selective and proper use of programmed learning or programmed instruction. The listings do not constitute a recommendation regarding quality or adherence to principles of programming.

2. *Automated education handbook.* Detroit, Michigan: Automated Education Center (Supplemented).

   A basic reference book in eight sections, headed as follows: (1) General, (2) Programmed Instruction, (3) Language Laboratories, (4) Computerized Educational Technology, (5) Administrative, (6) Curricular Considerations, (7) University Computer Centers, and (8) Appendices.

   The *Automated Education Letter*, published monthly, contains information on the latest developments in the field, new devices and machines, new instructional techniques and materials, conferences and conventions to be held in the near future, and programs that have instituted new techniques, media, and methods of instruction. (A service of **Automated Education Handbook**.)

3. *Programmed instruction guide.* Newburyport, Massachusetts: Entelek Incorporated (Supplemented).

   The guide gives "recommendations for reporting the effectiveness of programmed instruction materials," a list of bibliographies of programmed teaching material, a list of periodicals, a list of publishers, a list of program devices, a coded index of programs, and a "data bank."

Journals

1. *Journal of the National Society for Programmed Instruction.* San Antonio, Texas: NSPI, Trinity University.

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Reports the use and development of programmed instruction in business, industry, the governmental services, and all levels of education.

2. *Educational technology.* Englewood Cliffs, New Jersey: Educational Technology Publications, Inc.

Articles on new materials and techniques oriented to schools, industry, and higher education.

3. *Training in business and industry.* New York: Gellert Publishing Corp.

Articles on training practices, techniques, materials and equipment. Includes articles on programmed instruction.

4. *Educate.* New York: Gellert Publishing Corp.

A magazine for America's educational leaders. Articles on new materials, educational media, and instructional developments – including programmed instruction.

5. *Audio-visual communications review.* Washington, D.C.: Department of Audio-Visual Instruction, National Education Association.

Articles and reviews of publications of interest to those using programmed instruction. Vol. 14, No. 1, Spring, 1966, was devoted to programming.

6. *Audio-visual instruction.* Washington, D.C.: Department of Audio-Visual Instruction. National Education Association.

A wide range of articles with information regarding educational media, materials, techniques, and instructional developments.

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